



Professor Klaus-Jürgen Bathe

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<http://www.adina.com/theory/theory1.shtml>

Professor of Mechanical Engineering
Massachusetts Institute of Technology
Cambridge, Massachusetts

Klaus-Jürgen Bathe (born 26 May 1943) is a Professor of Mechanical Engineering at Massachusetts Institute of Technology who specializes in computational mechanics. Bathe is considered to be one of the pioneers in the field of finite element analysis and its applications.

Early life and education

Born in Berlin on 26 May 1943, Bathe had his high school education at Oldenburg in Federal Republic of Germany. He then went to South Africa to earn his graduate degree in Civil Engineering and Engineering Mechanics from the University of Cape Town in 1967. Bathe received his M.Sc. degree in Civil Engineering

from University of Calgary, Canada in 1969. Then, he received his Ph.D. in Civil Engineering from University of California, Berkeley in 1971. His dissertation was on numerical solution of large eigenvalue problems, where he developed the subspace iteration method.

Career

During his time as a post-doctoral fellow (1972–1974) at UC Berkeley, Bathe et al. developed the finite element programs SAP IV and NONSAP, which have been used by thousands of individuals and organizations in research and practice and had a major impact in advancing the finite element method. In 1974 he started the development of the ADINA system. Soon after, he joined the department of mechanical engineering at MIT. In 1986, he founded ADINA R&D, Inc.

Major contributions

Bathe has made fundamental contributions in the finite element analysis of structures, heat transfer, field problems, CFD, and fluid-structure interactions. Specifically, the following contributions are worth highlighting:

- Development of accurate shell finite elements (the MITC shell elements).

- Formulation of large deformations of solids (notably the Total and Updated Lagrangian formulations).

- Solution techniques for linear and nonlinear dynamic response of structures and fluids.

- Fundamental theoretical contributions.

Honors and awards

Bathe has received many honorary doctorates from institutions around the world: Slovak Academy of Sciences and Technical University of Zilina, Slovakia ; Technical University of Darmstadt, Germany; Technical University of Rzeszow, Poland; Universidad Politécnic de Madrid, Spain; University of Bucharest, Romania; University of Miskolc, Hungary and University of Buenos Aires, Argentina.

Bathe has been listed as an ISI Highly Cited Author in Engineering by the ISI Web of Knowledge, Thomson Scientific Company.

Editorial activities

Bathe currently serves as the Co-Editor of the Journal of Computers & Structures. He is also the editor of the Springer's book series on Computational Fluid and Solid Mechanics. He has organized the twelve bi-yearly conferences “Nonlinear Finite Element Analysis and ADINA”, at M.I.T., 1977–1999, and since 2001, the bi-yearly M.I.T. Conferences on Computational Fluid and Solid Mechanics

Books

- K. J. Bathe and E. L. Wilson, Numerical Methods in Finite Element Analysis, Prentice-Hall, 1976.

- K. J. Bathe, Finite Element Procedures in Engineering Analysis, Prentice-Hall, 1982.

- K. J. Bathe, Finite Element Procedures, Prentice Hall, 1996.

- D. Chapelle and K. J. Bathe, The Finite Element Analysis of Shells – Fundamentals, Springer, 2003; 2nd edition, Springer, 2011.

- M. Kojic and K. J. Bathe, Inelastic Analysis of Solids and Structures, Springer, 2005.

- K. J. Bathe, To Enrich Life, Amazon.com, 2007.

- M. L. Bucleam, K. J. Bathe, The Mechanics of Solids and Structures – Hierarchical Modeling and the Finite Element Solution, Springer, 2011.